

How to Construct A Bonsai Heating Bed

It is a well-known fact that root growth in bonsai containers is enhanced and accelerated if the containers are kept warm, especially after a tree has been repotted. This is especially true for trees whose roots may have been compromised during the repotting process, or for trees that just do not have a strong root mass to begin with.

Construction of a heating bed to accomplish this purpose is actually pretty simple and only requires a couple of specialized components. Here's how you do it:

- 1. Decide how large you want your bed to be, and purchase heating mats accordingly.** The mats I use come from a source called the Oregon Bag Company (OBC) and are usually referred to as "propagation mats." These are proven, good quality commercial grade mats, and they are easily purchased on line. They may come in different sizes, but mine are 18" x 60", so if you lay two, end to end, you have a heating bed that is ten feet long and about two feet wide. Since a maximum of four mats can be daisy-chained together, they come in two varieties: one with a primary power cord and an add-on mat that is designed to connect to the initial one. OBC also sells a thermostat that is designed to work with the mats. *It is imperative to have one in order to set and automatically control the bed temperature.*
- 2. Create a solid, level bed for the mats using 2" thick rigid foam insulation,** cut to the desired size of your installation but large enough to accommodate the combined length and width of the heating pads. The rigid insulation can be placed on the floor of your garage or shed, or it can be placed on an elevated bench. The main idea is that it provides a flat, level surface as a base for the installation and, just as importantly, the insulation keeps the heat from simply dissipating through the bottom of the bed.
- 3. Place a sheet of ½" plywood, cut to the same size as the rigid insulation, on top of the insulation.** The purpose of this component is simply to protect the insulation from melting as a

result of direct contact with the heating pads, a refinement added as a result of field experience.

4. **Lay the heating pads on top of the aforementioned plywood sheet.** You can install them end-to-end or side-by-side, depending on the overall configuration you need. Allow at least a half inch of space between the pads *and never allow them to overlap one another.*
5. **Place a layer of greenhouse plastic or 8-10 mil Visqueen over the heating pads** and cut it to size so it actually extends beyond the edges of the entire bed by an inch or two. Since the pumice fill of the heating bed should be kept moist, the purpose of this plastic sheet is to prevent moisture from being in direct contact with the heating pads. *This is a precaution against possible pad deterioration over time.*
6. **Build a wood “corral” around the entire perimeter of the bed.** This can be constructed using 2 x 4’s or 2 x 6’s and should be rigid enough to contain the pumice fill.
7. **Fill the entire extent of the heating bed with 2-3” of pumice** and moisten the pumice using a bonsai watering nozzle or pump sprayer. The pumice does not need to be swimming in water, but it should be uniformly moist. The objective is to conduct moist heat, not dry heat, to the containers and therefore to the rootage, not to have them submerged in water. Any excess water within the pumice bed should be allowed to seep out at the perimeter, over the plastic sheet.
8. **Connect the power cord from the heating mat to the thermostat and the thermostat to the power source.** Set the desired temperature according to directions provided with the thermostat. Make sure that the sensing probe provided with the thermostat is, at all times, buried within the pumice. If it is exposed to the air the pads will continue to heat but the desired temp will never be reached, so the bed will actually overheat. The objective is to maintain a bed temperature of 75-80 degrees.

9. **Identify the trees to be placed in the bed and nestle their containers into the pumice.** Containers should not be in direct contact with the heating pads, but they should be partially set into the pumice. You can even mound the pumice around the pots if you wish.

Monitor the bed regularly, especially in the early days after installation, to make sure that the desired temperature is being maintained, that the bed and containers are feeling the warmth and that the pumice is being kept moist. When it begins to dry out, the drying will generally be most apparent in areas immediately adjacent to the containers.

Trees can be watered while they are in the heating bed, but watering frequency may be affected by their placement in the pumice, so that needs to be monitored as well.

Generally speaking, for healthy trees that have just been repotted, a stay in the heating bed of two to three weeks is adequate to give the roots a growing boost. If you know that a tree is weak, or its roots have been compromised, it is OK to leave it in for a longer period.

Please note that a heating bed should be installed within a space that is protected from the outside cold. This could be a garage, a basement, a shed or a bench in a greenhouse. It is not intended for, nor will it be effective in, an outdoor location in our climate during the winter months.